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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/542,383

07/14/2005

Kensuke Ogawa

Q88674

3458

23373 7590 11/30/2007  
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EXAMINER

ROJAS, OMAR R

ART UNIT

PAPER NUMBER

2874

MAIL DATE

DELIVERY MODE

11/30/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Supplemental Office Action Summary**

Application No.

10/542,383

Applicant(s)

OGAWA ET AL.

Examiner

Omar Rojas

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 November 2007.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-10 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 08/23/2007.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application  
6) ☒ Other: Detailed Action.

### **DETAILED ACTION**

This is a supplemental Final Rejection.

#### ***Response to Amendment***

1. With regards to the amendment filed on 11/06/2007, all the requested changes to the claims have been entered. Claims 1-10 are pending.

#### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Information Disclosure Statement***

3. The prior art documents submitted by applicant(s) in the Information Disclosure Statement(s) ("IDS") filed on 08/23/2007 have all been considered and made of record (note the attached copy of form(s) PTO-1449).

#### ***Claim Rejections - 35 USC § 102***

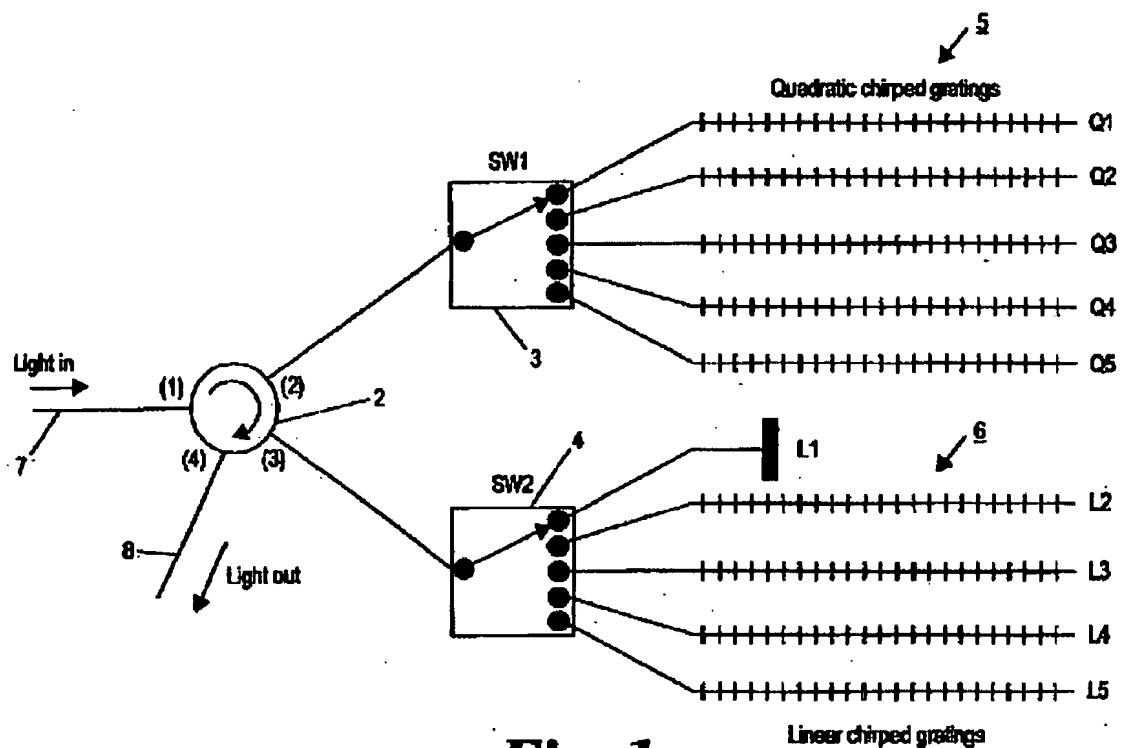
4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. **Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by US 6,768,822 B1 to Robinson et al. ("Robinson").**

*In re* claim 1, Robinson discloses in Figures 1-6, a dispersion compensation element compensating chromatic dispersion of an optical signal input from outside, characterized by comprising:

a waveguide 5/6/7 guiding said optical signal from an input edge to an output edge; and

dispersion varying means **L1-L4** and **Q1-Q5** for making variable the linear dispersion (i.e., "absolute value of the chromatic dispersion") and for making variable the dispersion slope (i.e. "sign of chromatic dispersion"), independent of the linear dispersion, given to said optical signal in said waveguide (**column 2, lines 48-57**). *See also* the entire Robinson document for further details. Figure 1 of Robinson is reproduced below.



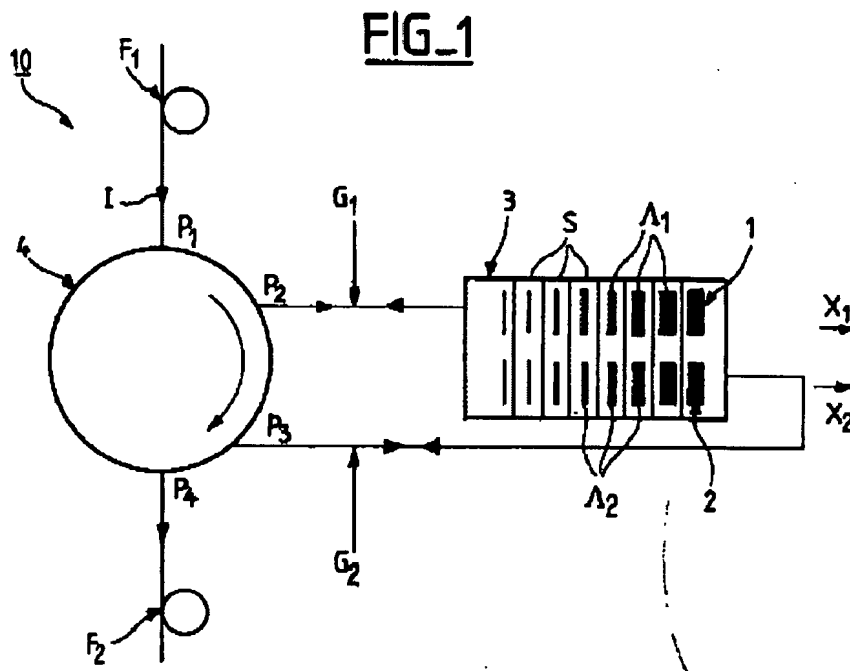
**Fig. 1**

6. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by US 2003/0035625 A1 to Riant et al. ("Riant").

*In re* claim 1, Riant discloses a dispersion compensation element 10/20/30 compensating chromatic dispersion of an optical signal input from outside, characterized by comprising:

a waveguide  $F_1/3/31/32$  guiding said optical signal from an input edge to an output edge;  
and

dispersion varying means 1/2 for making variable the chromatic dispersion (i.e., "absolute value of the chromatic dispersion") and for making variable the dispersion slope (i.e., "sign of chromatic dispersion"), independent of the chromatic dispersion, given to said optical signal in said waveguide (**paragraphs [015] and [039]**). *See also* the entire Riant document for further details. Figure 1 of Riant is reproduced below.



***Claim Rejections - 35 USC § 103***

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**8. Claims 2-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson or Riant as applied to claim 1 above, and further in view of Patent No. 6,931,189 B2 to Lee et al. ("Lee"). The Lee patent was cited in a prior Office action.**

Robinson or Riant only differ from claim 2 in that Robinson or Riant does not disclose " two material having different dielectric constants alternately and periodically in a direction in which said waveguide continues, and a plurality of regions different in combination of the size and the interval of one said material existing in the other said material are arranged along a direction in which said waveguide continues". Lee, on the other hand, shows in Figure 6, a photonic crystal waveguide comprising a plurality of regions **22-24** different in combination of the size and the interval of one material **20** existing in another material **21** arranged along a direction in which said waveguide continues. The motivation or suggestion for combining would have been to reduce coupling losses when coupling different types of waveguide structures as described in Lee's Abstract. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claim 2 in view of Robinson or Riant in view of Lee.

*In re* claims 3-6, the recited limitations are considered to be functional in nature and do not describe any additional device structure. Because the prior art disclose all the positively recited structural features of claims 1 and 2, the limitations of claims 3-6 are considered inherently present or inherently capable of being performed when the device of Robinson or Riant is modified by Lee to obtain the invention specified by claim 2.

**9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson or Riant in view of Lee as applied to claim 2 above, and further in view of Patent No. 6,731,846 B2 to Hosomi et al. ("Hosomi"). The Hosomi patent was cited in a prior Office action.**

Robinson or Riant in view of Lee only differs from claim 7 in that none of the references disclose dispersion varying means comprises an energy supplier for supplying energy changing the refractive index of the waveguide independently from outside for each of the waveguide regions. Hosomi, on the other hand, shows electrodes 105/106 for supplying a voltage to change the refractive index of a waveguide region 107. *See* Figures 16a-16b of Hosomi and column 9, lines 18-49. The motivation or suggestion for combining would have been to continuously change the dispersion value by using a voltage as mentioned by Hosomi at column 9, lines 50-53. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claim 7 in view of Robinson or Riant combined with Lee, and further in view of Hosomi.

**10. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Robinson or Riant combined with Lee and Hosomi as applied to claims 2 and 7 above, and further in view of Patent No. 5,570,439 to Ido et al. ("Ido"). The Ido patent was cited in a prior Office action.**

*In re* claims 8-10, Robinson or Riant combined with Lee and Hosomi only differ from claims 8-10 in that none of the documents disclose changing the refractive index of at least part of the waveguide by changing the carrier density using a voltage supplied to the waveguide. Ido,

however, teaches that a waveguide can have its refractive index adjusted by applying a voltage to the waveguide thereby changing the carrier density. *See* Ido at column 4, lines 7-11. The motivation or suggestion for combining would have been to adjust the wavelength of the light to be dispersion compensated. *See* Ido at column 2, lines 11-15. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to obtain the invention specified by claims 8-10 in view of Robinson or Riant combined with Lee and Hosomi, and further in view of Ido.

### ***Conclusion***

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Omar Rojas whose telephone number is (571) 272-2357. The examiner can normally be reached on Monday-Friday (9:00PM-5:00PM).



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick, can be reached on (571) 272-2344. The official facsimile number for regular and After Final communications is (571) 273-8300. The examiner's RightFAX number is (571) 273-2357.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Omar Rojas/  
Patent Examiner, Art Unit 2874

or  
November 27, 2007



Rodney Bovernick  
Supervisory Patent Examiner  
Technology Center 2800